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**REMARKS**

By this amendment, Applicants have not amended the claims. As a result, claims 20-30 remain pending in this application. Reconsideration in view of the following remarks is respectfully requested.

In the Office Action, claims 22, 23, 26, and 27 are objected to as being dependent upon a rejected base claim. Applicants thank the Examiner for the indication of allowable subject matter in these claims. Further, Applicants thank the Examiner for the courtesy extended during a telephone interview with Applicants' undersigned representative conducted on October 18, 2005. During the interview, the appropriateness of the Office's combination of U.S. Patent No. 4,661,175 (Kuphal) in view of U.S. Patent No. 6,563,141 (Dawson) was discussed. No exhibits were presented during the interview. As a result of the interview, the Examiner agreed with Applicants' representative that should Applicants resubmit the previously submitted arguments with additional details, the Examiner would withdraw the Final Office Action.

To this extent, in the Final Office Action, the Office again rejects claims 20 and 21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kuphal and Dawson. In order to establish a *prima facie* case of obviousness, the Office must show that (1) every feature is taught or suggested by Kuphal and/or Dawson; (2) Kuphal, Dawson, or generally available knowledge suggests or motivates the modification(s); and (3) one would have a reasonable expectation of success. MPEP 2143. Because the Office fails to establish a *prima facie* case of obviousness, Applicants respectfully request withdrawal of the rejections of claims 20 and 21 for the following reasons.

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In particular, the Office proposes to modify Kuphal's device by including the substrate and layered structure of Dawson. Interpreting Kuphal and Dawson only for the purposes of this response, FIG. 1 of Kuphal, which is cited by the Office in support of its rejection, shows a device in which the active layer includes Indium (In), Gallium (Ga) and Arsenic (As) with or without Phosphorus (P) while each of the remaining layers includes In and P. Dawson describes a device in which each layer, with the exception of dielectric layers, includes Ga and Nitrogen (N) with or without In or Aluminum (Al). In modifying the Kuphal device by including one or more layers of the Dawson device, the Office proposes to create a device that includes an InP buffer layer and an InAlGa<sub>N</sub> quaternary layer.

Applicants submit that such a modification would violate the teachings of Kuphal by substantially altering the design and operational characteristics of Kuphal's device. In particular, Kuphal's device does not include N or Al in any layer nor does Dawson's device include P or As in any layer. The Office's modification creates a device that includes a multilevel quaternary structure comprising multiple layers, each of which includes N and a buffer layer that includes P. In sharp contrast, the express teachings of Kuphal require the inclusion of P and/or As in each layer, which is not the case in the Office's proposed device. As a result, Applicants respectfully submit that the combination of Kuphal and Dawson is improper, and request withdrawal of the rejection of claims 20 and 21 as allegedly being unpatentable over the combination of Kuphal and Dawson.

Further, the Office provides no support, either in Kuphal, Dawson, or the generally available knowledge that suggests or motivates the modification(s). In sharp contrast, the express teachings of Kuphal exclude any layers that include N, and the express teachings of

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Dawson exclude any layers that include P. As a result, the Office has failed to meet its burden to establish a *prima facie* case of obviousness, and Applicants again request withdrawal of the rejection of claims 20 and 21 as allegedly being unpatentable over the combination of Kuphal and Dawson.

Still further, the Office provides no support, either in Kuphal, Dawson, or the generally available knowledge that one would have a reasonable expectation of success in creating the device proposed by the Office. In sharp contrast, as discussed previously, the express teachings of Kuphal and Dawson at least implicitly teach against such an expectation that the Office's proposed device would be functional, let alone be "a semiconductor device with increased performance" as alleged by the Office. As a result, the Office has failed to meet its burden to establish a *prima facie* case of obviousness, and Applicants again request withdrawal of the rejection of claims 20 and 21 as allegedly being unpatentable over the combination of Kuphal and Dawson.

Still further, Applicants respectfully submit that the Office misinterprets the teachings of Kuphal. In particular, interpreting Kuphal only for the purposes of this response, Applicants note that Kuphal provides "a double hetero-structure of InGaAsP/InP, or, alternatively of InGaAs/InP." Abstract. To this extent, Kuphal's double hetero-structure comprises an "active layer of either InGaAsP..., or, alternatively, of InGaAs." Col. 3, lines 18-20. The Office interprets the InP layer of Kuphal as allegedly disclosing Applicants' claimed buffer layer. In sharp contrast, Applicants' claimed invention comprises a nitride based heterostructure device. By definition, the active portion of a nitride based heterostructure device comprises N, which is absent from any portion of either embodiment of Kuphal's device, let alone the active layer. To

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this extent, Applicants respectfully submit that a design for a double hetero-structure comprising an active layer of InGaAs with or without P is unrelated to a nitride based heterostructure device. As a result, Kuphal does not disclose, *inter alia*, the inclusion of a buffer layer comprising In in a nitride based heterostructure device, and Applicants again request withdrawal of the rejection of claims 20 and 21 as allegedly being unpatentable over the combination of Kuphal and Dawson.

Further, the Office rejects claims 24-25 and 28-30 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kuphal in view of Dawson further in view of Japanese Patent No. 11-243251 (Sasanuma). With respect to claims 24 and 29, Applicants note that the Office relies on the same interpretation of Kuphal and combination of Kuphal and Dawson as discussed above with reference to claim 20. To this extent, Applicants herein incorporate the arguments presented above with respect to claim 20. Further, Applicants note that modifying Kuphal with the teachings of Sasanuma violates the teachings of Kuphal for reasons similar to those presented above with respect to claim 20 and Dawson. Additionally, the Office also fails to provide any motivation for the modification or any evidence that one would have a reasonable expectation of success in creating the device proposed by the Office. As a result, the Office has failed to meet its burden to establish a *prima facie* case of obviousness, and Applicants respectfully request withdrawal of the rejection of claim 24 and claims 25 and 28, which depend therefrom, and claim 29 and claim 30, which depends therefrom, as allegedly being unpatentable over Kuphal in view of Dawson further in view of Sasanuma.

Applicants submit that each of the pending claims is patentable for one or more additional unique features. To this extent, Applicants do not acquiesce to the Office's interpretation of the claimed subject matter or the references used in rejecting the claimed subject matter.

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Additionally, Applicants do not acquiesce to the Office's combinations and modifications of the various references or the motives cited for such combinations and modifications that were not specifically addressed herein. These features and the appropriateness of the Office's combinations and modifications have not been separately addressed herein for brevity. However, Applicants reserve the right to present such arguments in a later response should one be necessary.

In light of the above, Applicants respectfully submit that all claims are in condition for allowance. Should the Examiner require anything further to place the application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the number listed below.

Respectfully submitted,



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